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**PART 1**

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# Dying Oil Field Saps Soviet Output

## Mismanagement Blamed for Drop in West Siberia Region

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MOSCOW—In 1985, oil prospectors working in the swampy woodlands of western Siberia drilled a test hole near the Ob River and fortuitously struck what soon proved to be the largest petroleum deposit ever found in the Soviet Union and the 10th-largest anywhere.

By the mid-1970s, the Samotlor, as the field came to be known, was producing nearly one-quarter of the country's oil. More than any other single discovery, this giant field not only staved off an impending oil crisis as older fields went into decline in the mid-1970s, but it helped transform the Soviet Union into the world's leading petroleum producer—ahead of the United States and Saudi Arabia—while sustaining the Soviet Union's position as a major oil exporter.

Now, with the passage of only 10 more years, not a long time in the life of such a field, the Samotlor is dying. Profligate, forced-draft exploitation by cheap but destructive methods, compounded by chaotic management of the west Siberian oil fields and lagging efforts to explore for new deposits, has led the Samotlor into a premature decline. With it, the fortunes of the Soviet oil industry have taken a turn for the worse.

### Dipped Slightly

After several years of essentially stagnant output, Soviet oil production has begun to fall for the first time since the end of World War II. Official figures show that output dipped slightly in 1984, by 0.6%. While government plans called for a production increase of 2% this year, figures for the first eight months of 1985 instead show a

decline of 4%, to just under 12 million barrels per day.

According to Western economic analysts based in Moscow, it is too soon to tell whether Soviet oil output has fallen back to a new,

lower plateau—a significant problem in itself—or whether the oil industry has entered the sustained and potentially disastrous decline that was forecast by the U.S. Central Intelligence Agency in 1977.

In either case, the CIA's controversial prediction that Soviet oil output would soon peak now appears to have been correct. The premature by several years. The consequences depend on whether the slide continues and, if so, how fast. But the potential exists for serious economic disruptions in both the Soviet Union and Eastern

Europe.

Soviet leader Mikhail S. Gorbachev has acknowledged that western Siberia's faltering oil production is already hindering the country's sluggish economy and he has said that the decline is continuing.

To underscore the gravity of the Soviet Union's developing oil crisis, Gorbachev flew to the Tyumen region earlier this month for a personal inspection tour of the heartland of the west Siberian oil and gas fields, a desolate wilderness 2½ times the size of France.

"Tyumen is the country's biggest source of raw hydrocarbon resources. We have no other like it," Gorbachev said in a bluntly worded speech that was later televised and published in the national newspapers, apparently with some deletions.

Gorbachev said western Siberia has failed for three years in a row to meet production targets set by economic planners in Moscow. "This disruption is causing difficulties in the national economy," he said and added that "at the same time, the lag continues to grow instead of shrinking."

The potential consequences of declining oil production reach far beyond bottlenecks in the domestic Soviet economy. Five of Moscow's six Comecon trading partners in

Eastern Europe—Romania is the only exception—depend on the Soviet Union for nearly 90% of their oil. Moscow has promised to maintain current export levels to Eastern Europe, and presumably to Cuba and its other Third World allies, through next year. But this promise may now be hard to keep.

### Europe May Get Less

Moreover, Soviet oil and gas sales to the West—mainly Western Europe—earn 60% of the hard currency Moscow needs to buy imported grain, consumer goods and industrial equipment. Finland has been told to expect a reduction of 1 million tons—or 12.5%—in oil deliveries this year, according to Finnish sources, and there are unconfirmed reports that other Western European customers have been told to expect similar shortfalls this year from contracted deliveries.

Soviet newspapers, and Gorbachev himself, have been remarkably candid about the causes of the oil problem.

Investigative reports over the past six months in Pravda and

Izvestia, the country's two most authoritative newspapers, have provided a catalogue of the oil industry's ills, most of which afflict the Soviet economy as a whole: an obsession with growing output at any cost, a management structure of paralyzing complexity, reluctance to introduce new technology, neglect of elementary needs such as adequate housing for workers, and waste on a colossal scale.

Soviet ideology holds that problems like the rapacious exploitation of natural resources and the neglect of workers occur only in Western capitalism. But the experience of western Siberia suggests



that Soviet state capitalism is by no means immune to such failings.

Samotlor is the largest of about 50 producing fields in western Siberia, which now supplies 60% of the country's oil. The most immediate cause of its decline, according to Soviet and Western experts, is the prolonged injection of massive amounts of water into the field's oil-bearing strata to accelerate the flow of petroleum to thousands of producing wells.

Water-injection is used in the West to maintain the natural level of reservoir pressure in oil fields. But Soviet oil producers use this method to raise the reservoir pressure above natural levels to accelerate production in response to demands from the authorities in Moscow for steadily increasing output.

Excessive water injection is said to have damaged the Samotlor and other west Siberian fields. In some cases, water has leapfrogged ahead of the oil, isolating it from wells and partitioning the reservoir.

#### Quotas, Pay Bonuses

As a result, according to Izvestia, in the main fields of western Siberia, "ever-increasing amounts of water are pouring from the wells along with the petroleum." In many places, according to official figures, water now makes up more than half the output of Siberian oil wells.

The prevailing philosophy of oil extraction, Izvestia acidly observed last May, has been to "pump as much as we can" to ensure the

overfulfillment of quotas—and resulting pay bonuses for officials that "make their lives easier." Samotlor and other producing fields were made to bear the brunt of these demands as the plethora of ministries in charge of western Siberia failed to open more than half the new fields programed for the current five-year plan, which ends this year.

Initially, 30 new fields were to be opened in this period. The target was later reduced to 24, but as of last summer only 14 new fields had been brought into production.

"There was not enough manpower and money for the rest," according to Izvestia's, three-man team of investigators. "As a result, to fulfill the plan it has become necessary to 'open the faucets' as widely as possible at the sites where gushers were still flowing."

During his tour of Tyumen in September, Gorbachev accused the regional party organization and government ministries of "choosing the path of least resistance—by

deciding to compensate for shortcomings with an increased burden on the big fields." Forced-draft production was squeezing 3 million barrels of oil a day from the Samotlor field when it peaked in 1980.

#### Foreseen by Experts

"The peak could not be maintained. Samotlor . . . began to slide downhill. In the process, its production plans also went to pieces," Izvestia said in May. The article confirmed that "a substantial part of the Tyumen region's oil deficit (below the plan target) belongs to Samotlor."

None of this has come as a surprise to petroleum experts on the scene. Beginning in the early 1970s, researchers in western Siberia warned officials in Moscow of impending disaster, but their alarm went largely unheeded.

In particular, Izvestia disclosed, a senior petroleum researcher identified as E.P. Efremov—now the director of the Siberian Petroleum Research Institute—warned in 1978 of the "extreme overburdening of the best-known and most accessible deposits, deviations from accepted techniques, and a reluctance to adopt mechanized means of production." These warnings, the newspaper remarked sarcastically, "couldn't be heard over the roar of the gushers."

In addition to abusing the west Siberian fields, oil producers have fallen years behind in the installa-

tion of modern pumping equipment. Water injection was cheaper, "the quality of Soviet-made pumps

was at best dubious and, in any case, equipment deliveries are running 10 years behind schedule. As a

result, more than 2,000 wells at Samotlor alone have simply stopped producing.

"Progressive methods of mechanized extraction are being introduced with agonizing slowness," Gorbachev said in Tyumen. "Technical equipment is extremely insufficient and there are many examples of its unreliability."

To make matters worse, the Samotlor field's 600 miles of internal pipelines are wearing out. Multiple, simultaneous breaks of rusted pipes, with accompanying fires and explosions, are reportedly a regular occurrence. Newspapers have quoted the chief engineer at Samotlor as saying that there is no money to fix the pipelines: "No one knows how the rash of breaks can be prevented, or who will replace the badly rusted pipes, or when."

Moreover, a chronic shortage of electric power in the region has hampered industrial development, and power outages play havoc with production. A two-hour loss of electric power in the Siberian winter is enough to freeze the water injection systems, and such outages are said to happen frequently.

"How could it happen that the country's biggest fuel-producing region begins to experience a power shortage?" Pravda asked with a note of incredulity in early 1983.

Oil producers blamed the slow pace of power-plant construction by "the Ministry of Power and Electrification. The ministry blamed the oil producers for grossly underestimating their own needs. Both were probably right. According to Pravda, planners in Moscow expected that the region would need no more than 28 billion kilowatt hours of electricity a year by the end of 1985. But by 1983 the region was already consuming 40 billion kilowatt hours.

#### Living Conditions Poor

Besides producing oil, the numerous ministries in charge of western Siberia were also supposed to be building housing, stores, schools, roads and health clinics for 700,000 oil workers and their families. As it turned out, the "social infrastructure," as the newspapers call it, received the dregs of financial resources. Dismal living conditions in one of the earth's more inhospitable wildernesses have contributed to a rapid and disruptive labor turnover.

All these shortcomings and the resulting decline in oil output have brought the Soviet Union face to face with another major failing of national energy policy: a systematic neglect of exploratory drilling over the past 15 years that has left the oil industry without an adequate fallback.

Soviet reports have had relatively little to say about this aspect of the oil problem, but Western analysts consider it a critical factor.

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"Siberian oil experts had begun sounding the alarm as early as 1970," Thane Gustafson, of Georgetown University in Washington, notes in a recent issue of the journal *Soviet Economy*. "But these were years of abundance in the Soviet oil industry, the major west Siberian fields were new and growing fast, and Soviet planners did not at first take the exploration problem very seriously."

#### **Drilling Increase Ordered**

In late 1977, apparently in response to the CIA's public prediction of an impending crisis as much as to the warnings of Soviet experts, President Leonid I. Brezhnev ordered a massive increase in west Siberian drilling. Between then and the end of 1984, drilling in the region quadrupled to 52.5 million feet. But the bulk of the increase turns out to have been devoted not to long-term exploration but to the quick development of known deposits in a desperate effort to avert a fall in production. The decline was only postponed.

Apart from stepped-up drilling, the response to the oil crisis thus far has tended toward a traditional emphasis on discipline and punishment of officials—short of the national leadership—who are presumed to be responsible. As many as 10 investigating commissions at a time have been dispatched to the west Siberian oil fields, where their chief effect, according to *Izvestia*, has been to distract engineers and administrators from more urgent duties.

Between early 1984 and last spring, two-thirds of the executives in the oil and gas administrations of the Tyumen region were fired, reprimanded or deprived of bonuses, with no visible effect on production. The minister of the petroleum industry, Nikolai A. Maltsev, was pensioned off last February at the youthful age of 56, and the minister of petroleum refining, Viktor S. Fyodorov, 73—whom Gorbachev accused by name in June of "not keeping his word" to rectify his ministry's failures—appears destined for the same fate.

#### **Modern Extraction Pushed**

In August, the Politburo announced that construction and "installation" work, presumably of modern extraction equipment, is to be stepped up 60% in the next five-year planning period that begins in 1986. A similar acceleration of exploratory drilling is expected.

Whether this proves sufficient will be determined by the rate of decline in oil output and by the state's ability to follow through on its basic energy strategy, which calls for reducing demand for oil by conservation and by shifting consumption toward coal, nuclear electric power and natural gas.

The outlook for conservation, however, is poor in the Soviet Union, where, unlike the West, state-run industries have little incentive to save on resources. Meanwhile, the coal industry has its own catalogue of problems and the construction of nuclear power plants is running about one-third behind plan targets.

The one consistent bright spot in the Soviet economy has been the gas industry. With the rapid development of western Siberia's immense gas fields, production has grown an average of 7% a year over the past five years.

But here too, there are signs of trouble on the horizon. The same profligate and complacent attitudes that brought the oil industry to its present quandary can be found in the gas industry as well, according to no less an authority than Gorbachev.

After touring the main west Siberian gas field at Urengoy, Gorbachev said there was no denying that the growth rate of production was impressive. But he said that in order to meet output targets, "the active wells are being run at yields higher than planned," as in the oil fields, a practice likely to accelerate their exhaustion.

"When one begins to look at the details," Gorbachev said, "it transpires that here too, commissioning of new capacity is behind schedule, as is growth of the maintenance system and the road network. And automation of equipment is still nascent."

"The oil lessons must be full absorbed," Gorbachev warned. "This applies first of all to leaders of the gas industry."

If, indeed, the Soviet Union's

developing oil shortage expands to include natural gas, then the world's largest country will find itself in the paradoxical position of an energy crisis in the midst of an unequalled treasury of natural resources.

Experience, however, suggests that the Soviets will muddle through at colossal cost. The shortage of fuels in the midst of plenty may also prove to have a silver lining. If nothing else, the threat of an energy crisis could provide the impetus Gorbachev will need to overcome bureaucratic resistance to any fundamental reforms he may hope to bring to an economic structure that has changed little since Josef Stalin created it in the 1930s.